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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	**Application No.** 10/779,442	**Applicant(s)** LEE, HO-KEUNG	
	Examiner REDENTOR M. PASIA	**Art Unit** 2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 June 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. In view of the Appeal Brief filed on June 4, 2008, PROSECUTION IS HEREBY REOPENED. New grounds of rejection are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 7-12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in

the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Applicant's specification does not disclose "a computer having a memory for storing a software program that, when executed by a processor, causes the computer to perform" (the method indicated in claim 7. If the Applicant believes that the above-mentioned claim limitation is disclosed in the specification, the Applicant is directed to provide specific portions of the specification that shows the above-mentioned claim limitation.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 13-16, and 19-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13 recites the limitation "a network element" in line 6 of claim 13. It is unclear if "a network element" in line 6 is related to "a network element" in line 3. If they are related, it is suggested that "a network element" in line 6 should be revised to "[[a]] <u>the</u> network element". If they are not related, "a network element" in line 6 should be revised to "[[a]] another network element". There is insufficient antecedent basis for this limitation in the claim.

Claim 19 recites the limitation "the communication path" in line 6. It is unclear if claim 19 is meant to be similar to what was claimed in claim 9. Claim 9 (belonging to another claim group), shows "determining network capacity using communication path data..." The Examiner clearly understands what was intended to be claimed in claim 9. However, claim 19 shows

"determining network capacity using the communication path from the analyzing means." It is unclear how network capacity is determined from a communication path in this way.

However, in the examination of claims, claim 19 was interpreted to be similar to what was presented in claim 9 ("...using the communication path data....".).

Similar observations are also seen in claims 20-21 and thus, the same action was taken by the Examiner in examining claims 20-21.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1, 7, 14-15, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aho (US 5,408,618; hereinafter Aho) in view of Wu (US 5,185,860; hereinafter Wu) in further view of Devlin (US 7,050,404; hereinafter Devlin).

As to claim 1, Aho shows a method of analyzing network characteristics (Abstract, claim 1; shows a mechanism (that performs the method) for monitoring and responding to changes of a local area network.) comprising the steps of:

querying a network element in a communication network (Figures 1, 3; shows multiple nodes in network 100; claim 1; querying node and said plurality of nodes being connected to a network) for local network information (claim 1; requesting that said plurality of nodes send configuration information to said querying node.)

receiving the local network information (claim 1; configuration information) from the network element in response to querying (claim 1; receiving said configuration information from nodes which respond to said requesting step),

the local network information (claim 1, configuration information) comprising one or more items selected from the group including topology information, connection information, and performance information (col. 1, lines 48-61; configuration information can be location, negotiation and capability information);

analyzing the local network information received (claim 1; determining from said configuration information) to map a communication path established in the network (claim 1; creating a connection list based on said determining step, said connection list comprising connection information about each of said nodes that responded to said querying node and that am capable of communicating with said querying node. Figure 8C, col. 11-12, lines 65 to line 4; shows that the connection list includes the path list 843 that shows the different paths from the querying node to the destination node. Since claim 1 shows that the connection list includes the nodes that responded to the querying node, it can be seen that the paths (that are listed in the path list) are already established since it allows that nodes to communicate with the querying node.).

Aho shows an Automatic Configuration Mechanism (ACM) that can be performed during initialization to create a connection list and can also be performed to update a connection list (col. 3, lines 10-58), by sending query messages to different nodes in the network and thereby also receiving responses from the different nodes in the network. Even though Aho shows the step of receiving local network information and mapping the communication path, Aho does not specifically show the steps of: responsive to the local network information received and the

communication path mapped in the analyzing step, selecting a next network element of the communication path for querying; and if the next network element has been selected, iterating the method from the querying step for the next network element.

However, the above-mentioned claim limitations are well-established in the art as shown by Wu. Wu also shows a network node discovery system that shows a general way of discovering network elements also by querying nodes in the network (abstract). Specifically, Wu shows the steps of:

responsive to prior steps, selecting a network element (claim 10, steps c-d shows adding (also denotes selecting) each node in said second list to said node list.) of the communication path for querying (claim 10, shows a repetitive querying of network nodes. Also supported by claim 11)

if the next network element has been selected, iterating the method from the querying step for the next network element (claim 10, step e; repeating steps c-d for each said node in the second list; Also supported by claim 11.).

In view of the above, having the system of Aho and then the given well-established features of Wu, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Aho to specifically include the additional steps of Wu as shown above, in order to allow discovery of additional network nodes by repeating the discovery process over time (col. 2, lines 58-60).

Even though modified Aho shows the above features, modified Aho does not specifically show a next network element in a communication path.

However, the above-mentioned claim limitations are well-established in the art as shown by Devlin. Devlin also shows a method of discovering network elements through the use of wave processes (col. 2, lines 60). Specifically, Devlin shows a way of discovering a next network element in a communication path (col. 3, liens 14-23; shows that a known network device such as a known router in a given LAN is interrogated to learn the existence of other connected network elements, then these network elements in turn are interrogated to learn of even more connected network elements. It is noted that with the above discovery process, Devlin shows a step of discovering network elements and other network elements (claimed next network element). Figure 2 further shows the method indicated above.).

In view of the above, it would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the system of modified Aho as taught by Devlin since Devlin stated (at col. 2, lines 61-65) that such modification would provide a more efficient way of determining network topology.

As to claim 7, Aho shows a computer having a memory for storing a software program that, when executed by a processor (Figure 2 specifically shows the structure of the network nodes in the network shown in Figure 1 and 3. The network node (AS/400 midrange computer/ PS/2 computer shows a central processing unit and a storage unit that contains the programs/applications utilized by the network nodes.), causes the computer to perform a method comprising the steps of:

querying a network element in a communication network (Figures 1, 3; shows multiple nodes in network 100; claim 1; querying node and said plurality of nodes being connected to a

network) for local network information (claim 1; requesting that said plurality of nodes send configuration information to said querying node.)

receiving the local network information (claim 1; configuration information) from the network element in response to querying (claim 1; receiving said configuration information from nodes which respond to said requesting step),

the local network information (claim 1, configuration information) comprising one or more items selected from the group including topology information, connection information, and performance information (col. 1, lines 48-61; configuration information can be location, negotiation and capability information);

analyzing the local network information received (claim 1; determining from said configuration information) to map a communication path established in the network (claim 1; creating a connection list based on said determining step, said connection list comprising connection information about each of said nodes that responded to said querying node and that am capable of communicating with said querying node. Figure 8C, col. 11-12, lines 65 to line 4; shows that the connection list includes the path list 843 that shows the different paths from the querying node to the destination node. Since claim 1 shows that the connection list includes the nodes that responded to the querying node, it can be seen that the paths (that are listed in the path list) are already established since it allows that nodes to communicate with the querying node.).

Aho shows an Automatic Configuration Mechanism (ACM) that can be performed during initialization to create a connection list and can also be performed to update a connection list (col. 3, lines 10-58), by sending query messages to different nodes in the network and thereby also receiving responses from the different nodes in the network. Even though Aho shows the

step of receiving local network information and mapping the communication path, Aho does not specifically show the steps of: responsive to the local network information received and the communication path mapped in the analyzing step, selecting a next network element of the communication path for querying; and if the next network element has been selected, iterating the method from the querying step for the next network element.

However, the above-mentioned claim limitations are well-established in the art as shown by Wu. Wu also shows a network node discovery system that shows a general way of discovering network elements also by querying nodes in the network (abstract). Specifically, Wu shows the steps of:

responsive to prior steps, selecting a network element (claim 10, steps c-d shows adding (also denotes selecting) each node in said second list to said node list.) of the communication path for querying (claim 10, shows a repetitive querying of network nodes. Also supported by claim 11)

if the next network element has been selected, iterating the method from the querying step for the next network element (claim 10, step e; repeating steps c-d for each said node in the second list; Also supported by claim 11.).

In view of the above, having the system of Aho and then the given well-established features of Wu, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Aho to specifically include the additional steps of Wu as shown above, in order to allow discovery of additional network nodes by repeating the discovery process over time (col. 2, lines 58-60).

Even though modified Aho shows the above features, modified Aho does not specifically show a next network element in a communication path.

However, the above-mentioned claim limitations are well-established in the art as shown by Devlin. Devlin also shows a method of discovering network elements through the use of wave processes (col. 2, lines 60). Specifically, Devlin shows a way of discovering a next network element in a communication path (col. 3, liens 14-23; shows that a known network device such as a known router in a given LAN is interrogated to learn the existence of other connected network elements, then these network elements in turn are interrogated to learn of even more connected network elements. It is noted that with the above discovery process, Devlin shows a step of discovering network elements and other network elements (claimed next network element). Figure 2 further shows the method indicated above.).

In view of the above, it would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the system of modified Aho as taught by Devlin since Devlin stated (at col. 2, lines 61-65) that such modification would provide a more efficient way of determining network topology.

As to claim 14, further modified Aho shows the step of storing the communication path established through the communication network (Aho: Figure 8B, connection list; col. 9, lines 20-24; ACM 245 of AS/400 node 165 will extract the configuration information contained in each of the response messages and add the information to connection list 250. (The format and content of the connection list of the preferred embodiment will be described in greater detail in the discussion associated with FIG. 8B.).

As to claim 15, this claim is rejected using the same reasoning set forth in the rejection of claim 14.

As to claim 17, Aho shows an apparatus (claim 12, querying node) for analyzing network characteristics in a network (Abstract, claim 1; shows a mechanism (that performs the method) for monitoring and responding to changes of a local area network.) including a plurality of network elements interconnected together to form a communication network (figure 1, 3 shows multiples network nodes forming network 100), the apparatus comprising:

means (Figure 2A, CPU 222 performing the functionalities stored in storage 255) for querying a network element in the communication network for local network information (Figures 1, 3; shows multiple nodes in network 100; claim 1; querying node and said plurality of nodes being connected to a network) for local network information (claim 1; requesting that said plurality of nodes send configuration information to said querying node.),

the local network information (claim 1, configuration information) comprising one or more items selected from the group including topology information, connection information, and performance information (col. 1, lines 48-61; configuration information can be location, negotiation and capability information);

means (Figure 2A, CPU 222 performing the functionalities stored in storage 255), responsive to receipt of the local network information, for analyzing the local network information received (claim 1; determining from said configuration information) to map a communication path established in the network (claim 1; creating a connection list based on said determining step, said connection list comprising connection information about each of said nodes that responded to said querying node and that am capable of communicating with said

querying node. Figure 8C, col. 11-12, lines 65 to line 4; shows that the connection list includes the path list 843 that shows the different paths from the querying node to the destination node. Since claim 1 shows that the connection list includes the nodes that responded to the querying node, it can be seen that the paths (that are listed in the path list) are already established since it allows that nodes to communicate with the querying node.).

Aho shows an Automatic Configuration Mechanism (ACM) that can be performed during initialization to create a connection list and can also be performed to update a connection list (col. 3, lines 10-58), by sending query messages to different nodes in the network and thereby also receiving responses from the different nodes in the network. Even though Aho shows the step of receiving local network information and mapping the communication path, Aho does not specifically show the <u>means</u>, responsive to the local network information received and the communication path mapped in the analyzing means, <u>for selecting a next network element of the communication path for querying</u>; <u>wherein the means for querying is responsive to a notification that the next network element has been selected</u>.

However, the above-mentioned claim limitations are well-established in the art as shown by Wu. Wu also shows a network node discovery system that shows a general way of discovering network elements also by querying nodes in the network (abstract). Specifically, Wu shows the means (Figure 1, computer system 100), responsive to prior steps, for selecting a network element (claim 10, steps c-d shows adding (also denotes selecting) each node in said second list to said node list.) of the communication path for querying (claim 10, shows a repetitive querying of network nodes. Also supported by claim 11)

wherein the means for querying is responsive to a notification that the next network element has been selected (claim 10, step e; repeating steps c-d for each said node in the second list; Also supported by claim 11.).

In view of the above, having the system of Aho and then the given well-established features of Wu, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Aho to specifically include the additional steps of Wu as shown above, in order to allow discovery of additional network nodes by repeating the discovery process over time (col. 2, lines 58-60).

Even though modified Aho shows the above features, modified Aho does not specifically show a next network element in a communication path.

However, the above-mentioned claim limitations are well-established in the art as shown by Devlin. Devlin also shows a method of discovering network elements through the use of wave processes (col. 2, lines 60). Specifically, Devlin shows a way of discovering a next network element in a communication path (col. 3, liens 14-23; shows that a known network device such as a known router in a given LAN is interrogated to learn the existence of other connected network elements, then these network elements in turn are interrogated to learn of even more connected network elements. It is noted that with the above discovery process, Devlin shows a step of discovering network elements and other network elements (claimed next network element). Figure 2 further shows the method indicated above.).

In view of the above, it would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the system of modified Aho as taught by Devlin since

Devlin stated (at col. 2, lines 61-65) that such modification would provide a more efficient way of determining network topology.

8. Claims 2, 8 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aho (US 5,408,618; hereinafter Aho) in view of Wu (US 5,185,860; hereinafter Wu) in further view of Devlin (US 7,050,404; hereinafter Devlin) in even further view of Nataranjan (US 6,539,427; hereinafter Nataranjan).

As to claim 2, further modified shows all of the elements except the step of receiving a notification signal from one or more network elements, the notification signal indicative of a network event, and wherein the step of querying is initiated in response to receiving said notification signal.

However, the above-mentioned claim limitation is well-established in the art as shown by Natarajan. Natarajan shows the step of receiving a notification signal from one or more network elements (claim 18; receiving an event notification; Figure 7, 9; shows that the network element receives event notification message from server), the notification signal indicative of a network event (claim 18; event notification; col. 10, lines 18-35; when an error is detected by network element 204A, the event handler 274A will report the error to event server 270 to be forwarded to other network and/or control elements (e.g. policy engine 254), which may be interested in this type of information.), and wherein the step of querying is initiated in response to receiving said notification signal (claim 18; it is noted that the event notification occurs is initiated prior to retrieval of updated information relating to at least one control parameter of a network element).

In view of the above, having the system of further modified Aho, then given the well-established teaching of Natarajan, it would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the system of further modified Aho as taught by Natarajan in order to able to automatically and dynamically monitor characteristics of various aspects of the network and adapt to changing network conditions by dynamically and automatically modifying selected network parameters in order to achieve a desired performance level (col. 2, lines 15-22).

As to claim 8, this claim is rejected using the same reasoning set forth in the rejection of claim 2.

As to claim 18, further modified Aho shows all of the elements except means for receiving a notification signal from one or more network elements, the notification signal indicative of a network event, and wherein the querying means is responsive to receiving said notification signal.

However, the above-mentioned claim limitation is well-established in the art as shown by Natarajan. Natarajan shows the means (Figure 5A) for a notification signal from one or more network elements (claim 18; receiving an event notification; Figure 7, 9; shows that the network element receives event notification message from server), the notification signal indicative of a network event (claim 18; event notification; col. 10, lines 18-35; when an error is detected by network element 204A, the event handler 274A will report the error to event server 270 to be forwarded to other network and/or control elements (e.g. policy engine 254), which may be interested in this type of information.), and wherein the querying means is responsive to receiving said notification signal (claim 18; it is noted that the event notification occurs is

initiated prior to retrieval of updated information relating to at least one control parameter of a network element).

In view of the above, having the system of further modified Aho, then given the well-established teaching of Natarajan, it would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the system of further modified Aho as taught by Natarajan in order to able to automatically and dynamically monitor characteristics of various aspects of the network and adapt to changing network conditions by dynamically and automatically modifying selected network parameters in order to achieve a desired performance level (col. 2, lines 15-22).

9. Claims 3-6, 9-12, and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aho (US 5,408,618; hereinafter Aho) in view of Wu (US 5,185,860; hereinafter Wu) in further view of Devlin (US 7,050,404; hereinafter Devlin) in further view of Bertin (US 6,400,681; hereinafter Bertin).

As to claim 3, further modified Aho shows all of the elements except the step of determining network capacity using communication path data from the analyzing step.

However, the above-mentioned claim limitation is well-established in the art as shown by Bertin. Bertin shows the step of determining network capacity by exchanging information from the origin node, the transit nodes, and the destination node (Figure 6-7 shows that one of the characteristics indicated in the Topology Database/Link Characteristics is the total capacity (claimed bandwidth); Figure 7 (steps that include 707) specifically show the step of determining whether the link has enough bandwidth after analyzing path parameters in step 704).

In view of the above, having the system of further modified Aho and then given the well-established teachings of Bertin, it would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the system of further modified Aho, as taught by Bertin in order to minimize the connection setup delay and in particular the time to select an optimal path throughout the network (col. 5, lines 49-51).

As to claim 4, further modified Aho shows all of the elements except <u>the step of determining network performance</u> using the communication path data from the analyzing step.

However, the above-mentioned claim limitation is well-established in the art as shown by Bertin. Bertin shows the step of determining network performance (col. 12, 17-37; it is noted that there are multiple variables that determine the performance of a network, which includes connection setup delay, connection blocking probability, etc. The quantities have an affect upon how paths are computed. It is noted that these parameters are related in determining the elements of the routing database shown in Figure 4).

In view of the above, having the system of further modified Aho and then given the well-established teachings of Bertin, it would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the system of further modified Aho, as taught by Bertin in order to minimize the connection setup delay and in particular the time to select an optimal path throughout the network (col. 5, lines 49-51).

As to claim 5, further modified shows all of the elements except <u>the step of detecting network faults</u> using communication path data from the analyzing step.

However, the above-mentioned claim limitation is well-established in the art as shown by Bertin. Bertin shows the step of detecting network faults (col. 12, 17-37; it is noted that there are

multiple variables that determine the performance of a network, which includes loss probability, error probability, etc. The quantities have an affect upon how paths are computed. It is noted that these parameters are related in determining the elements of the routing database shown in Figure 4; Figure 12, step 1201; col. 21, lines 40-42 shows a test that determines whether or not the configuration update is related to a change in the link state (i.e. failure on the link).).

In view of the above, having the system of further modified Aho and then given the well-established teachings of Bertin, it would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the system of further modified Aho, as taught by Bertin in order to minimize the connection setup delay and in particular the time to select an optimal path throughout the network (col. 5, lines 49-51).

As to claim 6, further modified Aho shows all of the elements except a routing table and a connection table.

However, the above-mentioned claim limitation is well-established in the art as shown by Bertin. Bertin shows a routing table and a connection table (Figures 4-6; col. 5, lines 55-60 shows a Routing Database (claimed routing table) for storing the selected or computed paths with their characteristics and the Topology Database (claimed connection table) for storing network configuration and traffic characteristics. The Routing Database is updated simultaneously with the Topology Database.).

In view of the above, having the system of further modified Aho and then given the well-established teachings of Bertin, it would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the system of further modified Aho, as taught by

Bertin in order to minimize the connection setup delay and in particular the time to select an optimal path throughout the network (col. 5, lines 49-51).

As to claims 9, 10, 11, and 12, these claims are rejected using the same reasoning set forth in the rejection of claim 3, 4, 5 and 6, respectively.

As to claim 19, further modified Aho shows all of the elements except means for determining network capacity using the communication path from the analyzing means.

However, the above-mentioned claim limitation is well-established in the art as shown by Bertin. Bertin shows the means (Figure 3, routing controller) for determining network capacity by exchanging information from the origin node, the transit nodes, and the destination node (Figure 6-7 shows that one of the characteristics indicated in the Topology Database/Link Characteristics is the total capacity (claimed bandwidth); Figure 7 (steps that include 707) specifically show the step of determining whether the link has enough bandwidth after analyzing path parameters in step 704).

In view of the above, having the system of further modified Aho and then given the well-established teachings of Bertin, it would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the system of further modified Aho, as taught by Bertin in order to minimize the connection setup delay and in particular the time to select an optimal path throughout the network (col. 5, lines 49-51).

As to claim 20, further modified Aho shows all of the elements except means for determining network performance using the communication path from the analyzing means.

However, the above-mentioned claim limitation is well-established in the art as shown by Bertin. Bertin shows the means (Figure 3, routing controller) for determining network

performance (col. 12, 17-37; it is noted that there are multiple variables that determine the performance of a network, which includes connection setup delay, connection blocking probability, etc. The quantities have an affect upon how paths are computed. It is noted that these parameters are related in determining the elements of the routing database shown in Figure 4).

In view of the above, having the system of further modified Aho and then given the well-established teachings of Bertin, it would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the system of further modified Aho, as taught by Bertin in order to minimize the connection setup delay and in particular the time to select an optimal path throughout the network (col. 5, lines 49-51).

As to claim 21, further modified Aho shows all of the elements except means for detecting network faults using the communication path from the analyzing means.

However, the above-mentioned claim limitation is well-established in the art as shown by Bertin. Bertin shows the means (Figure 3, routing controller) for detecting network faults (col. 12, 17-37; it is noted that there are multiple variables that determine the performance of a network, which includes loss probability, error probability, etc. The quantities have an affect upon how paths are computed. It is noted that these parameters are related in determining the elements of the routing database shown in Figure 4; Figure 12, step 1201; col. 21, lines 40-42 shows a test that determines whether or not the configuration update is related to a change in the link state (i.e. failure on the link).).

In view of the above, having the system of further modified Aho and then given the well-established teachings of Bertin, it would have been obvious to one of ordinary skill in the art at

the time of the invention to further modify the system of further modified Aho, as taught by Bertin in order to minimize the connection setup delay and in particular the time to select an optimal path throughout the network (col. 5, lines 49-51).

As to claim 22, this claim is rejected using the same reasoning set forth in the rejection of claim 6.

10. Claims 13 and 16 rejected under 35 U.S.C. 103(a) as being unpatentable over Aho (US 5,408,618; hereinafter Aho) in view of Habusha (US 6,477,590; hereinafter Habusha) in further view of Wu (US 5,185,860; hereinafter Wu) in further view of Devlin (US 7,050,404; hereinafter Devlin).

As to claim 13, Aho shows a method for analyzing network characteristics (Abstract, claim 1; shows a mechanism (that performs the method) for monitoring and responding to changes of a local area network.) comprising the steps of:

receiving a notification signal from a network element (col. 6, lines 28-48 shows that node 165 (i.e. Figure 2A) dispatches private query message (PRQM) to a FAX node (i.e. Figure 2B).), said notification signal indicative of a new communication path set-up by the network element (Figure 3; col. 6, lines 17-67; it is noted that the PRQM message was sent in order to satisfy a user's request to send a FAX. In order to send a FAX, the user (on node 165) needs to establish a communication path to any one of the FAX nodes in network 100 (as shown in Figure 1). By sending the PRQM message, it can be seen that the PRQM messages is indicative of a new communication path that was requested to any of the FAX nodes.) and including circuit

identifier information (Figure 4 show the structure of the PRQM message that includes addresses, routing information and control information);

querying a network element (Figures 1, 3; shows multiple nodes in network 100; claim 1; querying node and said plurality of nodes being connected to a network) in a communication network for connection information (claim 1; requesting that said plurality of nodes send configuration information to said querying node; col. 3, lines 45-46; the requested information may contain location, connection, and capability information);

receiving the connection information (claim 1; configuration information) from the network element in response to querying(claim 1; receiving said configuration information from nodes which respond to said requesting step);

analyzing the routing information received (claim 1; determining from said configuration information) to map the new communication path established in the network (claim 1; creating a connection list based on said determining step, said connection list comprising connection information about each of said nodes that responded to said querying node and that am capable of communicating with said querying node. Figure 8C, col. 11-12, lines 65 to line 4; shows that the connection list includes the path list 843 that shows the different paths from the querying node to the destination node. Since claim 1 shows that the connection list includes the nodes that responded to the querying node, it can be seen that the paths (that are listed in the path list) are already established since it allows that nodes to communicate with the querying node.).

comparing the connection information with the circuit identifier information to determine a match condition (figure 8D; col. 11, lines 23-48; it is noted that when one of the query messages is sent as a public query message (PUQM), a security check is performed. The

security check compares the information supplied in the PUQM message with the security list 870 shown in Figure 8D that shows the network node's system name, Node Type, and Ring ID. It is further noted that the presence of the security record indicates that a response is appropriate, and the connection can be established.).

Even though Aho shows the above comparison to determine a match condition to establish a connection, Aho does not specifically show that querying and receiving routing information from the network element. Also Aho does not specifically show selecting a next network element to query along the new communication path; if the next network element has been selected, fetching from the received circuit identifier information associated with the next network element and iterating the method from the step of querying for the next network element.

The above-mentioned claim limitations are well-established in the art as shown by Habusha. Habusha shows in order to completely establish a connection between two nodes, the nodes transmit a connection parameter packet to each other. Habusha shows the step of querying the network element for routing information (Figure 3 shows first node sending a Connection Parameter packet to second node; col. 7, lines 49-55 shows that the Connection Parameter packet sent by the first node contains session management parameters. This provides information to the receiver indicating parameters required to the receiver. It is noted that this can also be seen as a querying message.) and receiving routing information from the network element (Figure 3, shows second node sending another Connection Parameter packet to the first node after the first node sends the first Connection Parameter packet.).

In view of the above, having the system of Aho and then the well-established teaching of Habusha, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the the system of Aho as taught by Habusha in order to provide an efficient way for an administrator to monitor the operating states of multiple computers in a message queuing system.

Even though modified Aho shows the step of receiving local network information and mapping the communication path, Aho does not specifically show the steps of: responsive to the local network information received and the communication path mapped in the analyzing step, <u>selecting a next network element of the communication path for querying; and if the next network element has been selected, iterating the method from the querying step for the next network element.</u>

However, the above-mentioned claim limitations are well-established in the art as shown by Wu. Wu also shows a network node discovery system that shows a general way of discovering network elements also by querying nodes in the network (abstract). Specifically, Wu shows the steps of:

responsive to prior steps, selecting a network element (claim 10, steps c-d shows adding (also denotes selecting) each node in said second list to said node list.) of the communication path for querying (claim 10, shows a repetitive querying of network nodes. Also supported by claim 11)

if the next network element has been selected, iterating the method from the querying step for the next network element (claim 10, step e; repeating steps c-d for each said node in the second list; Also supported by claim 11.).

In view of the above, having the system of Aho and then the given well-established features of Wu, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of modified Aho to specifically include the additional steps of Wu as shown above, in order to allow discovery of additional network nodes by repeating the discovery process over time (col. 2, lines 58-60).

Even though further modified Aho shows the above features, modified Aho does not specifically show a next network element in a communication path.

However, the above-mentioned claim limitations are well-established in the art as shown by Devlin. Devlin also shows a method of discovering network elements through the use of wave processes (col. 2, lines 60). Specifically, Devlin shows a way of discovering a next network element in a communication path (col. 3, liens 14-23; shows that a known network device such as a known router in a given LAN is interrogated to learn the existence of other connected network elements, then these network elements in turn are interrogated to learn of even more connected network elements. It is noted that with the above discovery process, Devlin shows a step of discovering network elements and other network elements (claimed next network element). Figure 2 further shows the method indicated above.).

In view of the above, it would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the system of further modified Aho as taught by Devlin since Devlin stated (at col. 2, lines 61-65) that such modification would provide a more efficient way of determining network topology.

As to claim 16, further modified Aho shows the step of storing the communication path established through the communication network (Aho: Figure 8B, connection list; col. 9, lines

20-24; ACM 245 of AS/400 node 165 will extract the configuration information contained in each of the response messages and add the information to connection list 250. (The format and content of the connection list of the preferred embodiment will be described in greater detail in the discussion associated with FIG. 8B.).

Response to Arguments

Applicant's arguments with respect to claims 1-22 have been considered but are moot in view of the new ground(s) of rejection. Claims 1-22 are rejected as follows:

- Claims 1, 7, 14-15, and 17rejected under 35 U.S.C. 103(a) as being unpatentable over Aho (US 5,408,618; hereinafter Aho) in view of Wu (US 5,185,860; hereinafter Wu) in further view of Devlin (US 7,050,404; hereinafter Devlin).
- Claims 2, 8 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aho (US 5,408,618; hereinafter Aho) in view of Wu (US 5,185,860; hereinafter Wu) in further view of Devlin (US 7,050,404; hereinafter Devlin) in even further view of Nataranjan (US 6,539,427; hereinafter Nataranjan).
- Claims 3-6, 9-12, 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aho (US 5,408,618; hereinafter Aho) in view of Wu (US 5,185,860; hereinafter Wu) in further view of Devlin (US 7,050,404; hereinafter Devlin) in further view of Bertin (US 6,400,681; hereinafter Bertin).
- Claims 13 and 16 rejected under 35 U.S.C. 103(a) as being unpatentable over Aho (US 5,408,618; hereinafter Aho) in view of Habusha (US 6,477,590; hereinafter Habusha) in

further view of Wu (US 5,185,860; hereinafter Wu) in further view of Devlin (US 7,050,404; hereinafter Devlin).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to REDENTOR M. PASIA whose telephone number is (571)272-9745. The examiner can normally be reached on M-F 7:30am to 4:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Aung Moe can be reached on (571)272-7314. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Aung S. Moe/
Supervisory Patent Examiner, Art Unit 2616

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